

Melpomene, a New Genus of Grammitidaceae (Pteridophyta)

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ABSTRACT. *Melpomene*, a new genus of Grammitidaceae, is described, and combinations are made for the species known to belong to it. *Melpomene* can be distinguished from all other Grammitidaceae by its rhizome scales that are clathrate, basally cordate, and entire except at the apex where provided with one to ten minute papillae. The genus contains about 20 species and is primarily neotropical.

This paper is one in a series that have set forth new generic concepts in neotropical Grammitidaceae. In the series, *Grammitis* sensu lato has been divided into smaller monophyletic groups that have not previously been known or recognized. These groups, given generic status, are *Cochlidium* (Bishop, 1978), *Ceradenia* (Bishop, 1988), *Enterosora* (Bishop & Smith, 1992), *Grammitis* (Bishop, 1977), *Lellingeria* (Smith et al., 1991), and *Zygophlebia* (Bishop, 1989). Each group is believed to be monophyletic because it is defined by several correlating characteristics. In this paper, we describe another monophyletic group within the Grammitidaceae: *Melpomene* (the name of the Muse of Tragedy).

The distinctness of *Melpomene* was first recognized by the late L. Earl Bishop. We have determined what species belong to the genus and have found additional characteristics that define it. Therefore, we take sole responsibility for the description of the genus and new combinations.

Melpomene A. R. Smith & R. C. Moran, gen. nov. **TYPE:** *Polypodium moniliforme* Lagasca ex Sw., Syn. Fil. 33. 1806. = *Melpomene moniliformis* (Lagasca ex Sw.) A. R. Smith & R. C. Moran. Figure 1.

Plantae epiphytiae terrestres vel rupestres; squamae rhizomatis clathratae denigratae brunneolae vel vulgo rubellae integrae, base cordatae, apice glandulis praeditae; phylloodia absentia; folia plerumque pinnatisecta, hydathodis adaxialiter ornata; petioli et rhachides setosi, setis castaneis; venae non furcatae librae; sori rotundi superficiales.

Epiphytic, epipetric, or terrestrial; rhizome erect or short- to long-creeping, the scales strongly clath-

rate, cordate basally and attached at a single point, usually blackish or reddish, never setulose, with one to several papillose cells (glandular?) ca. 0.1 mm long at the apex, these often dislodged and not present; phylloodia absent; leaves pinnatifid, pinnatisect, or rarely 1-pinnate basally, linear to elliptic, pubescent and often setose, the hairs 0.1–0.2 mm long, branched, 2–8-celled, lax, pale reddish, with most of the color concentrated at the cross walls, the setae 0.3–3 mm long, castaneous, multicellular (the cross walls sometimes difficult to observe), erect to spreading; hydathodes present; veins free, often not visible; sori round or (rarely) slightly oblong, discrete, superficial or rarely slightly sunken, lacking globose, waxlike paraphyses, but some species with castaneous receptacular setae.

In his revision of American grammitids (as *Ctenopteris*), Copeland (1955) treated the species of *Melpomene* in four of his ten species groups. He placed most of the species of *Melpomene*, however, under the group of *C. moniliformis* (Lagasca ex Sw.) J. Smith (the first of his ten groups). In this group he also included several species now placed in *Lellingeria* and a few species belonging to other genera. Copeland defined the *C. moniliformis* group very loosely, saying that it consisted of "small, linear, coriaceous ferns" that were related to *Ctenopteris moniliformis* (= *Melpomene moniliformis*). Obviously, Copeland's characterization of the group is not sufficient to establish monophyly. Yet *Melpomene* does appear to be monophyletic, and we have found several characteristics of the stem scales that define it.

All *Melpomene* species have scales that are clathrate throughout (Fig. 1B, D, I, J, L, M, S). The scales are entire except at or near the apex, where one to ten, minute glandular cells occur (Fig. 1I, J, O, P). The base of the scales is cordate, sometimes with the basal auricles overlapping, and attached at a point (Fig. 1B, D, I, L, O, R). These four characteristics of the scales distinguish *Melpomene* from all other genera in the family.

Lellingeria is the only other genus of neotropical

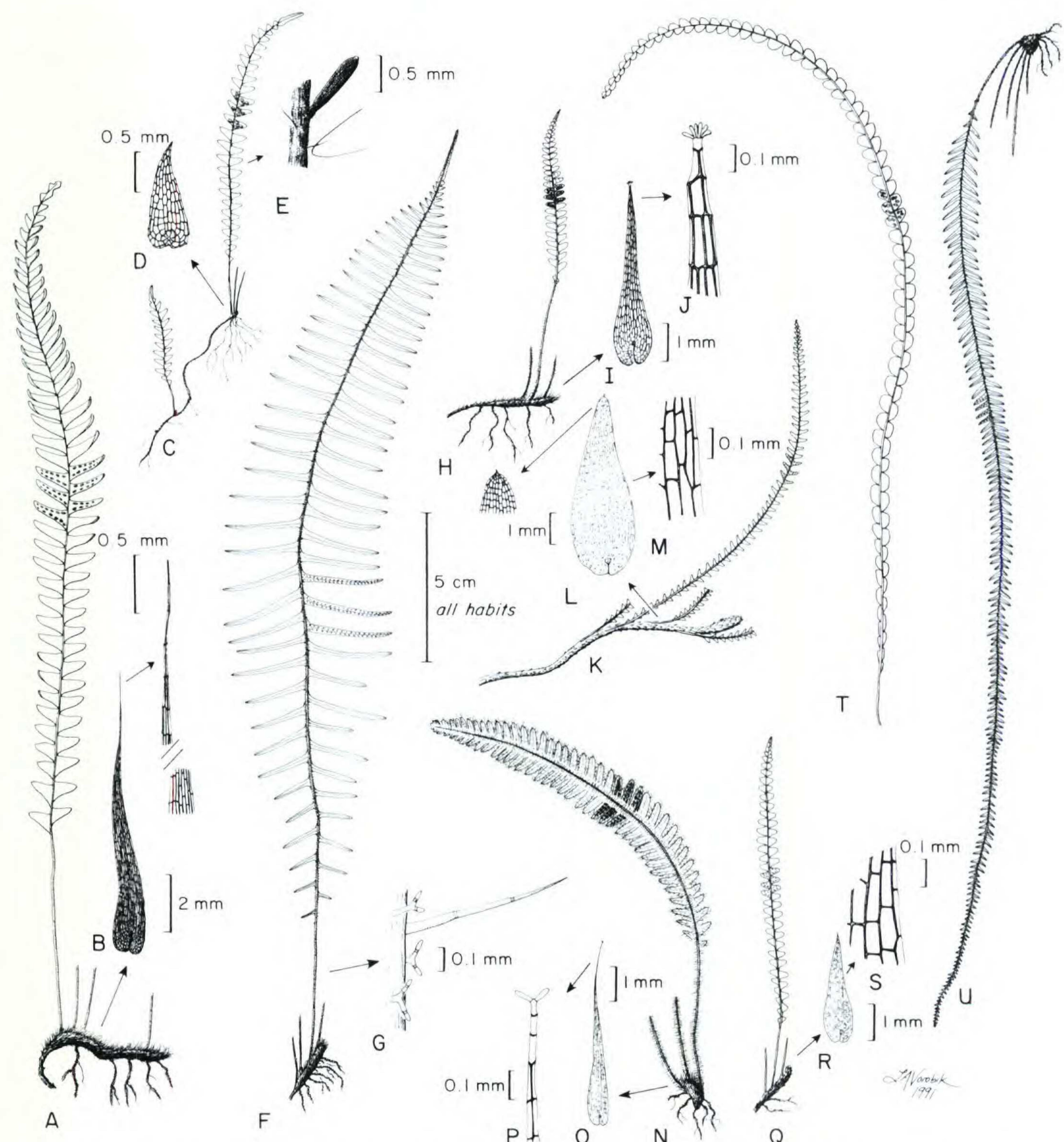


Figure 1. Characteristics of *Melpomene*. —A, B. *M. sodiroi*, Rimbach s.n. (Rosenstock exsic. 13; UC). —A. Habit. —B. Rhizome scale. —C-E. *M. anfractuosa*, Mickel 6771 (UC). —C. Habit, with small leaf from root proliferations. —D. Rhizome scale. —E. Fungal fruiting body from rachis. —F, G. *M. firma*, van der Werff & Gudiño 11105 (UC). —F. Habit. —G. Hairs on petiole. —H-J. *M. flabelliformis*, Smith et al. 1478 (UC). —H. Habit. —I. Rhizome scale. —J. Tip of rhizome scale. —K-M. *M. erecta*, Steyermark et al. 100548 (UC). —K. Habit. —L. Rhizome scale. —M. Detail of rhizome scale. —N-P. *M. pilosissima*, Mickel & Hellwig 3775 (UC). —N. Habit. —O. Rhizome scale. —P. Tip of rhizome scale. —Q-S. *M. moniliformis*, Mickel & Hellwig 4041 (UC). —Q. Habit. —R. Rhizome scale. —S. Detail of rhizome scale. —T. *M. assurgens*, habit, van der Werff & Palacios 8960 (UC). —U. *M. leptostoma*, habit, Hutchison 440 (UC).

Grammitidaceae that has strongly clathrate stem scales. Its scales, however, are often setulose marginally and/or at the apex and lack glands (or papillae) near the apex (Smith et al., 1991). The scales are also truncate basally, being attached across the entire length of the base.

In addition to the stem scales, *Melpomene* has

other characteristics that distinguish it, although these characteristics are not unique to the genus. In habit, the leaves are erect, never laxly pendent as in many American grammitids (the only exception is *M. leptostoma* (Fée) A. R. Smith & R. C. Moran, which may have arching or pendent leaves; Fig. 1U). The laminae are generally thick or coriaceous,



Figure 2. Worldwide distribution of *Melpomene*. The number on the left is the number of species in the region; the number in parentheses is the number of those species endemic to the region.

and linear to narrowly elliptic (but *M. firma* (J. Smith) A. R. Smith & R. C. Moran may have broadly elliptic laminae). Dark, castaneous setae are present in most species, especially along the rachis and around the sori. These dark, castaneous setae are usually absent along the segment margins, with the exception of *M. pilosissima* (M. Martens & Galeotti) A. R. Smith & R. C. Moran, which has setae along the margins throughout, and *M. anfractuosa* (Kunze ex Klotzsch) A. R. Smith & R. C. Moran, which has marginal setae near the segment apices. The sporangial capsules are glabrous (never setulose), and the receptacle lacks glands. All species have conspicuous hydathodes adaxially, which distinguishes the genus from the anhydathodous *Ceradenia*, *Zygodlebia*, and *Enterosora*. *Melpomene anfractuosa* is unusual in the genus in having plantlets produced from buds on the roots (Fig. 1C) and by bearing black club-shaped fruiting bodies of the ascomycete *Acrospermum maxonii* Farlow (Fig. 1E).

Many species of *Melpomene*, when dried, emit a sweet spicy fragrance that does not occur in other grammitid genera. The fragrance persists for many decades after the plants are dried. This aroma can be almost overpowering to some individuals, while scarcely noticeable by others. Proctor (1985) reported that specimens of *M. firma* were still fragrant after 100 years. Mickel & Beitel (1988: 199) reported a "decidedly sweet smell on drying" in members of the *M. moniliformis* group. The species that

have this fragrance often discolor the herbarium sheet on which they are mounted, turning the paper brownish. The species that we have noted as having this fragrance include, but are not restricted to, *M. firma*, *M. flabelliformis*, *M. pilosissima*, *M. peruviana*, *M. vernicosa*, and *M. xiphopteroides*. Nothing is known about the chemistry of this fragrance.

Chromosome counts and spores, which are often helpful in defining fern genera, do not distinguish *Melpomene* from other genera of Grammitidaceae. Only one chromosome count is known in *Melpomene*: $n = \text{ca. } 74$ in *M. moniliformis* from Jamaica (Walker, 1966). This appears to be a tetraploid number based on 37, which is a common base number for grammitid genera. The spores of the Grammitidaceae are remarkably uniform, and those of *Melpomene* photographed (as *Grammitis*) by Tryon & Lugardon (1991) are similar to those of other grammitid genera.

The gametophytes of 25 species of Grammitidaceae from Jamaica, including four of *Melpomene* (*M. anfractuosa*, *M. firma*, *M. moniliformis*, and *M. pilosissima*), were described by Stokey & Atkinson (1958). An examination of their work does not reveal any differences between the gametophytes of *Melpomene* and those of other grammitids.

Melpomene is a genus of mid to high elevations, generally occurring from 1,000 to 4,000 m. In the New World, it ranges from Mexico to Panama, the

Antilles, and South America from Venezuela to Bolivia, Argentina, and southeastern Brazil. In the Old World it occurs in Africa, Madagascar, and Réunion (Fig. 2), but is apparently absent from Malesia, southeastern Asia, and the Pacific. The genus contains about 20 species that are badly in need of a monograph.

The relationships of *Melpomene* within the Grammitidaceae are not clear. The genus may be most closely related to the other hydathodous neotropical genera, particularly *Lellingeria* (which also has clathrate scales), or to the species groups that include *Grammitis taxifolia* (L.) Proctor and *G. subserrata* (Klotzsch) C. Morton, which belong to a yet unpublished genus *Terpsichore*, with over 50 New World species. There is no close affinity to *Xiphopteris* (sensu Copeland, 1956), which we regard as a mixture of *Cochlidium* and *Micropolypodium*.

A few species in the Pacific Basin resemble *Melpomene* in having hydathodes and clathrate or subclathrate, entire rhizome scales, e.g., *Ctenopteris lasiostipes* (Mett.) Brownlie, *C. aff. blechnoides* (Grev.) W. Wagner & Grether (both from New Caledonia), and *C. curtisii* (Baker) Copel. (Malesia). These species differ from *Melpomene* in one or usually more of the following characteristics: tangential walls of the rhizome scales slightly darkened (not clear and transparent as in *Melpomene*); scales lacking glandlike papillae at the tips, not cordate basally, sometimes curving inward at the tip (*C. curtisii*); branched hairs lacking on the petiole and rachis; clumped soral setae (*C. lasiostipes*); nonaromatic dried leaves. It seems likely that the resemblances in scales are due to convergent evolution and are not an indication of affinity.

NEW COMBINATIONS

Melpomene allosuroides (Rosenstock) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium allosuroides* Rosenstock, Meded. Rijks-Herb. 19: 16. 1913. *Ctenopteris allosuroides* (Rosenstock) Copel., Philipp. J. Sci. 84: 396. 1955 (1956). *Grammitis allosuroides* (Rosenstock) Lellinger, Amer. Fern J. 74: 58. 1984. TYPE: Bolivia. Cochabamba?: Lagodos Valley, 4,000 m, Herzog 2373 (holotype, S not seen; isotypes, UC, US not seen).

Distribution. Bolivia.

Melpomene anfractuosa (Kunze ex Klotzsch) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium anfractuosum* Kunze ex Klotzsch, Linnaea 20: 375. 1847. *Ctenopteris anfrac-*

tuosa (Kunze ex Klotzsch) Copel., Philipp. J. Sci. 84: 431. 1955 (1956). *Grammitis anfractuosa* (Kunze ex Klotzsch) Proctor, Rhodora 63: 35. 1961. TYPE: Venezuela. Mérida: Moritz 330? (isotype, US).

Distribution. Southern Mexico to Guyana and Peru, Antilles.

Melpomene assurgens (Maxon) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium assurgens* Maxon, Contr. Gray Herb. 165: 73. 1947. *Ctenopteris assurgens* (Maxon) Copel., Philipp. J. Sci. 84: 386. 1955 (1956). *Grammitis assurgens* (Maxon) C. Morton, Contr. U.S. Natl. Herb. 38: 116. 1967. TYPE: Ecuador. Pichincha: Quito-Santo Domingo road, Haught 3226 (holotype, US not seen).

Distribution. Ecuador, Colombia, Peru.

Melpomene brevipes (C. Morton) A. R. Smith & R. C. Moran, comb. et stat. nov. Basionym: *Grammitis sodiroi* var. *brevipes* C. Morton, Phytologia 22: 79. 1971. TYPE: Ecuador. Tunguragua: Mt. Tunguragua, Spruce 5279 (holotype, K not seen).

Distribution. Western Ecuador.

Melpomene deltata (Mickel & Beitel) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Grammitis deltata* Mickel & Beitel, Mem. New York Bot. Gard. 46: 198. 1988. TYPE: Mexico. Oaxaca: Dtto. Mixe, NW slope of Cerro Zempoaltepetl, Mickel 4637a (holotype, NY).

Distribution. Southern Mexico, El Salvador.

Melpomene dissimulans (Maxon) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium dissimulans* Maxon, Contr. U.S. Natl. Herb. 10: 502. 1908. *Ctenopteris dissimulans* (Maxon) Copel., Philipp. J. Sci. 84: 415. 1955 (1956). *Grammitis dissimulans* (Maxon) F. Seymour, Phytologia 31: 179. 1975. TYPE: Guatemala. Alta Verapaz: near Cobán, von Türkheim (J. D. Smith 884) (holotype, US not seen).

Distribution. Guatemala.

Melpomene erecta (C. Morton) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Grammitis erecta* C. Morton, Phytologia 22: 72. 1971. TYPE: Ecuador. Tunguragua: Mt. Tungura-

gua, Spruce 5279A (holotype, K not seen; isotype, GH).

Distribution. Venezuela, Ecuador, Peru.

Melpomene firma (J. Smith) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium firmum* Klotzsch, Linnaea 20: 378. 1947 (non Kaulf., 1827). *Ctenopteris firma* J. Smith, Hist. Fil. 184. 1875. *Grammitis firma* (J. Smith) C. Morton, Contr. U.S. Natl. Herb. 38: 110. 1967. TYPE: Guyana, Schomburgk 1170 (lectotype, inferentially chosen by Looser, Revista Univ. (Santiago) 36(1): 75. 1951, B not seen; isolectotype, K).

Polypodium aromaticum Maxon, Proc. U.S. Natl. Mus. 27: 743. 1904. *Ctenopteris aromatica* (Maxon) Copel., Philipp. J. Sci. 84: 418. 1955 (1956). *Grammitis aromatica* (Maxon) Proctor, Brit. Fern Gaz. 9: 218. 1965. *Xiphopteris aromatica* (Maxon) Crabbe, Brit. Fern Gaz. 9: 318. 1967. TYPE: Jamaica. Blue Mt. Peak, Underwood 1449 (holotype, NY not seen; fragment US).

Polypodium herzogii Rosenstock, Repert. Spec. Nov. Regni Veg. 6: 176. 1908. TYPE: Bolivia. Cochabamba: Incacorral, Herzog 783 (holotype, S not seen; isotypes, UC, US not seen).

Distribution. Southern Mexico to Honduras, Costa Rica to Guyana and Bolivia, Jamaica.

Melpomene flabelliformis (Poiret) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium flabelliforme* Poiret, Encycl. 5: 519. 1804. *Grammitis flabelliformis* (Poiret) C. Morton, Contr. U.S. Natl. Herb. 38: 57. 1967. *Xiphopteris flabelliformis* (Poiret) Schelpe, Bol. Soc. Brot., sér. 2, 41: 217. 1967. TYPE: Réunion, Commerson s.n. (P-JU 1098C).

Polypodium rigescens Bory ex Willd., Sp. Pl. ed. 4, 5: 183. 1810. *Ctenopteris rigescens* (Bory ex Willd.) J. Smith, Hist. Fil. 184. 1875. *Xiphopteris rigescens* (Bory ex Willd.) Alston, Bol. Soc. Brot., sér. 2, 30: 27. 1956. *Grammitis rigescens* (Bory ex Willd.) Lellinger, Proc. Biol. Soc. Wash. 89: 383. 1985. TYPE: Réunion, Bory s.n. (holotype, B-W 19668; isotype, P-JU 1098C).

Grammitis katasophistes Mickel & Beitel, Mem. New York Bot. Gard. 46: 200. 1988. TYPE: Mexico. Oaxaca: Dtto. Mixe, NW slope of Cerro Zempoaltepetl, Mickel 4637b (holotype, NY).

Distribution. Southern Mexico, Costa Rica to Venezuela and Peru, southern Brazil, Hispaniola, Africa, Madagascar, Réunion.

Melpomene leptostoma (Fée) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium leptostomum* Fée, Mém. Foug. 7: 58. 1857.

Ctenopteris leptostoma (Fée) Copel., Philipp. J. Sci. 84: 421. 1955 (1956). *Grammitis leptostoma* (Fée) F. Seymour, Phytologia 31: 179. 1975. TYPE: Mexico. Veracruz: near Orizaba, Schaffner 210 (holotype, P not found).

Polypodium productum Maxon, Contr. U.S. Natl. Herb. 13: 11. 1909. TYPE: Guatemala. Alta Verapaz: near Cobán, von Türcheim II. 1347, pro parte (holotype, US).

Distribution. Southern Mexico, Guatemala.

Melpomene melanosticta (Kunze) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium melanostictum* Kunze, Linnaea 9: 44. 1834. *Ctenopteris melanosticta* (Kunze) Copel., Philipp. J. Sci. 84: 385. 1955 (1956). *Grammitis melanosticta* (Kunze) F. Seymour, Phytologia 31: 179. 1975. TYPE: Peru, Poepig s.n. (holotype, LZ destroyed).

Polypodium calvum Maxon, J. Wash. Acad. Sci. 12: 440. 1922. *Ctenopteris calva* (Maxon) Copel., Philipp. J. Sci. 84: 386. 1955 (1956). TYPE: Cuba. Oriente: León 11131 (holotype, US).

Distribution. Southern Mexico, Guatemala, Costa Rica, Venezuela to Bolivia, Brazil, Cuba, Hispaniola.

Melpomene moniliformis (Lagasca ex Sw.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium moniliforme* Lagasca ex Sw., Syn. Fil. 33. 1806. *Ctenopteris moniliformis* (Lagasca ex Sw.) J. Smith, Hist. Fil. 184. 1875. *Grammitis moniliformis* (Lagasca ex Sw.) Proctor, Brit. Fern Gaz. 9: 219. 1965. *Xiphopteris moniliformis* (Lagasca ex Sw.) Crabbe, Brit. Fern Gaz. 9: 319. 1967. TYPE: Peru, collector not stated [Ruiz & Pavón?] (S not seen).

Distribution. Mexico to Venezuela, Bolivia, and southern Brazil, Jamaica, Hispaniola.

Melpomene pennellii (Copel.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Ctenopteris pennellii* Copel., Philipp. J. Sci. 84: 397. 1955 (1956). *Grammitis pennellii* (Copel.) C. Morton, Phytologia 22: 82. 1971. TYPE: Colombia. Cauca: "San José," San Antonio, Pennell & Killip 7379 (holotype, US).

Distribution. Western Colombia.

Melpomene peruviana (Desv.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium peruvianum* Desv., Mém. Soc. Linn. Par-

is 6: 231. 1827. *Ctenopteris peruviana* (Desv.) J. Smith, Hist. Fil. 184. 1875. *Grammitis peruviana* (Desv.) C. Morton, Contr. U.S. Natl. Herb. 38: 115. 1967. *Xiphopteris peruviana* (Desv.) Crabbe, Brit. Fern Gaz. 9: 319. 1967. TYPE: Peru. Collector not stated (holotype, P).

Polypodium peruvianum var. *subgibbosum* Rosenstock, Meded. Rijks-Herb. 19: 16. 1913. TYPE: Bolivia. Cochabamba?: Valle Lagados, Herzog 2373a (holotype, S not seen; isotype, UC).

Distribution. Ecuador to Bolivia, Argentina, and Brazil.

Melpomene pilosissima (M. Martens & Galeotti)

A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium pilosissimum* M. Martens & Galeotti, Nouv. Mém. Acad. Roy. Sci. Bruxelles 15(5): 39, t. 9, fig. 2. 1842. *Ctenopteris pilosissima* (M. Martens & Galeotti) Copel., Philipp. J. Sci. 84: 390. 1955 (1956). *Grammitis pilosissima* (M. Martens & Galeotti) C. Morton, Contr. U.S. Natl. Herb. 38: 114. 1967. *Xiphopteris pilosissima* (M. Martens & Galeotti) Crabbe, Brit. Fern Gaz. 9: 319. 1967. TYPE: Mexico. Oaxaca: Galeotti 6397 (lectotype, designated by Smith, Fl. Chiapas 2: 124. 1981, BR; isolectotype, K).

Polypodium acrodontium Fée, Crypt. Vasc. Brésil 2: 58, t. 99, fig. 2. 1872. TYPE: Brazil. Glaziou 4409 (holotype, P or RB not seen).

Grammitis zempoaltepetlensis Mickel & Beitel, Mem. New York Bot. Gard. 46: 205. 1988. TYPE: Mexico. Oaxaca: Dtto. Mixe, NW slope of Cerro Zempoaltepetl, trail from Taconche to Totontepec, Mickel 4638 (holotype, NY).

Distribution. Mexico to Honduras, Costa Rica to Surinam, Peru and Brazil.

Melpomene pseudonutans (Christ & Rosenstock) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium pseudonutans* Christ & Rosenstock, Repert. Spec. Nov. Regni Veg. 5: 15. 1908. *Ctenopteris pseudonutans* (Christ & Rosenstock) Copel., Philipp. J. Sci. 84: 389. 1955 (1956). *Grammitis pseudonutans* (Christ & Rosenstock) C. Morton, Contr. U.S. Natl. Herb. 38: 114. 1967. TYPE: Ecuador. Tunguragua: slopes of Mt. Tunguragua, Rimbach s.n. (holotype, S not seen; isotypes, UC, US not seen).

Distribution. Colombia, Ecuador, Peru.

Melpomene rosarum (Copel.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Ctenopteris*

rosarum Copel., Philipp. J. Sci. 84: 387. 1955 (1956). *Grammitis rosarum* (Copel.) C. Morton, Contr. U.S. Natl. Herb. 38: 116. 1967. TYPE: Ecuador. Chimborazo: vicinity of Huigra, Rose 22232 (holotype, US not seen).

Distribution. Colombia, Ecuador.

Melpomene sodiroi (Christ & Rosenstock) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium sodiroi* Christ & Rosenstock, Repert. Spec. Nov. Regni Veg. 5: 14. 1908. *Grammitis sodiroi* (Christ & Rosenstock) C. Morton, Contr. U.S. Natl. Herb. 38: 114. 1967. *Xiphopteris sodiroi* (Christ & Rosenstock) Crabbe, Brit. Fern Gaz. 9: 319. 1967. TYPE: Ecuador. Tunguragua: base of Mt. Tunguragua, Rimbach 24 (holotype, P? or S?; isotypes UC, US not seen).

Distribution. Western Colombia, western Ecuador.

Melpomene vernicosa (Copel.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Ctenopteris vernicosa* Copel., Philipp. J. Sci. 84: 452, t. 9. 1955 (1956). *Grammitis vernicosa* (Copel.) C. Morton, Contr. U.S. Natl. Herb. 38: 110. 1967. TYPE: Costa Rica. Cartago: Alto de Estrella, Standley 39140 (lectotype, designated by Morton, Contr. U.S. Natl. Herb. 38: 110. 1967, US not seen).

Distribution. Costa Rica, Panama, Venezuela, Colombia, Ecuador.

Melpomene wolfii (Hieron.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium wolfii* Hieron., Hedwigia 48: 249. 1909. *Grammitis wolfii* (Hieron.) C. Morton, Contr. U.S. Natl. Herb. 38: 115. 1967. TYPE: Ecuador. Pichincha: near Mindo, at base of Mount Pichincha, Stübel 745 (holotype, B not seen).

Distribution. Western Ecuador.

Melpomene xiphopteroides (Liebm.) A. R. Smith & R. C. Moran, comb. nov. Basionym: *Polypodium xiphopteroides* Liebm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Afd. ser. 5, 1: 196. 1849. *Grammitis xiphopteroides* (Liebm.) A. R. Smith, Amer. Fern J. 70: 26. 1980. TYPE: Mexico. Veracruz: "Hac. de Mirador," Liebmann [Liebm. Pl. Mex. 2548, Fl. Mex. 189] (lectotype, designated by Smith, Fl. Chiapas 2: 125. 1981, C).

Ctenopteris megaloura Copel., Philipp. J. Sci. 84: 391. 1955 (1956). TYPE: Guatemala. Alta Verapaz: Cobán, von Türckheim II. 1855 (holotype, US).

Polypodium rigens Maxon, Proc. U.S. Natl. Mus. 27: 741. 1904. *Ctenopteris rigens* (Maxon) Copel., Philipp. J. Sci. 84: 422. 1955 (1956). *Grammitis rigens* (Maxon) Proctor, Brit. Fern Gaz. 9: 219. 1965. TYPE: Jamaica. John Crow Peak, Maxon 1346 (holotype, US).

Distribution. Southern Mexico, Guatemala, Honduras, Costa Rica, Panama, Greater Antilles, Venezuela, Colombia, Ecuador, Peru.

INCERTAE SEDIS

The following names are not in current use, and we have not seen their types. Nevertheless, they apparently belong to *Melpomene* and have been included here for the benefit of future monographers. Most will probably prove to be synonyms of the above names.

Jamesonia adnata Kunze, Farrnkräuter 2: 80, t. 133, fig. 1. 1851. TYPE: Colombia. Tolima: Páramo de Tolima, Linden 1006 (holotype, LZ destroyed; isotypes, B not seen, FI not seen).

Polypodium angustissimum Fée, Crypt. Vasc. Brésil 2: 55, t. 96, fig. 3. 1873. TYPE: Brazil: Glaziou 5297 (P or RB, not seen).

Polypodium moniliforme var. *bogotense* Hieron., Hedwigia 48: 249. 1909. TYPE: Colombia. Cundinamarca: Bogotá region, Stübel 431 pro parte (holotype, B not seen).

Polypodium moniliforme var. *culebriliense* Bosco, Nuovo Giorn. Bot. Ital. N.S., 45: 149. 1938. TYPE: Ecuador. Chimborazo?: Páramo de Culebrilla, Crespi s.n. (holotype, TO not seen).

Polypodium moniliforme var. *major* Liebm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Afd. ser. 5, 1: 196. 1849. TYPE: Mexico. Veracruz: Pico de Orizaba, Liebmann [Liebm. Pl. Mex. 2533, Fl. Mex. 183] (lectotype, designated by Smith, Fl. Chiapas 2: 123. 1981, C).

Polypodium moniliforme var. *minus* Christ, Bull. Soc. Bot. Genève sér. 2, 1: 217. 1909. SYNTYPES: Costa Rica. Cartago: Crater of Volcán Irazú, Pittier 179 (P not seen, isosyntype US not seen); Brazil. Rio de Janeiro: Ule 3785 (P not seen).

Polypodium pilosissimum var. *glabriuscum* Mett., Abh. Senckenberg. Naturf. Ges. 2: 42. 1857. SYN-TYPES: Mexico: Leibold 97 (B not seen). Venezuela. Mérida: Moritz 216 (B not seen, US); Distrito Federal: Funck & Schlim 965 (B not seen).

Polypodium pilosissimum var. *hirsutum* Mett., Abh. Senckenberg. Naturf. Ges. 2: 42. 1857. TYPE: Venezuela. Funck & Schlim 1848 (holotype, B not seen).

Polypodium subcrenatum Hook., Ic. Pl. 8: pl. 719. 1848. TYPE: Ecuador. Pichincha: Jameson 215 (holotype, K not seen).

Polypodium subdicarpon Fée, Crypt. Vasc. Brésil 2: 55, t. 96, fig. 4. 1874. TYPE: Brazil. Glaziou 4410 (holotype, P or RB, not seen).

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